

CHUCHMAREV, S.K.

256T82

USSR/Metallurgy - Steel, Isotopic Analysis Jan 53

"Determination of the Distribution Rate of a Substance in Liquid Metal (Method of Radioactive Indicators)," M.M. Karnaukhov, Corr Mem Acad USSR, S.K. Chuchmarev

Iz Ak Nauk SSSR, OTN, No 1, pp 82-95

Develops method for lab study of processes connected with transfer of substance in liquid metal without sampling, using radioactive substances capable of emission of gamma rays as indicators.

256T82

Studies diffusion of Co and Fe in liquid iron at temp of  $1,620 \pm 20^\circ$ , using indicators  $\text{Co}^{60}$  and  $\text{Fe}^{59}$  and in eutectic Fe-C alloy.

*Chuchmarev, S.K.*

24-9-17/33

AUTHORS: Barmin, L. N., Yesin, O.A. and Chuchmarev, S.K. (Sverdlovsk)

TITLE: Study by the e.m.f. method of the properties of hydrogen which is dissolved in liquid slags. (Izuchenije svoystv vodoroda, rastvorennoego v zhidkikh shlakakh, metodom elektrodvizhushchikh sil)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1957, No.9, pp.114-118 (USSR)

ABSTRACT: For accurate determination of small quantities of  $H_2$  dissolved in slag it is of interest to use the e.m.f. method which permits study of the behaviour of the hydrogen directly inside the liquid slags; for this purpose it is necessary to build a galvanic cell with oxygen and hydrogen electrodes. The authors of this paper considered it advisable to investigate the behaviour of a hydrogen electrode in slags and to compare two types of oxygen electrodes, namely, the gaseous one and the one made of solid magnesium oxides. Three types of circuits were studied, namely, the hydrogen, the hydrogen-oxygen with a barrier made of  $MgO$  and the hydrogen-oxygen with one slag. The experiments were carried out in a  $SiC$  furnace, the temperature being measured with a Pt-Pt Rh thermocouple. The diagram of the cell for the first two mentioned circuits

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Study by the e.m.f. method of the properties of hydrogen which is dissolved in liquid slags.

is that shown in Fig.1, the diagram of the last mentioned circuit is shown in Fig.2. Data and the results are entered in tables and plotted in graphs. The authors have proved experimentally that the reversible hydrogen electrode can be materialised relatively simply for molten slags which do not contain easily reducible oxides. New experimental data confirm that solid magnesium oxide which is in contact with the liquid slag operates as a sort of oxygen electrode. The measurements have shown that the activity of the water dissolved in the slag is proportional to the square root of the activity of the calcium oxide; this is in agreement with the assumption that the hydrogen in the slag is present in the form of hydroxyl anions. The relation between the e.m.f. of the oxygen-hydrogen cell and the oxygen activity permits considering the negative magnitude of the e.m.f. as a measure of the basicity of the slag. There are 4 figures, 5 tables and 15 references, 5 of which are Slavic.

Card 2/2  
SUBMITTED: May 20, 1957.

ASSOCIATION: Ural Polytechnical Institute (Ural'skiy Politekhnicheskiy Institut), Sverdlovsk

AVAILABLE: Library of Congress.

CHUCHMAKOV, S. K.

✓ The mutual solubility of calcium oxide and calcium carbonate. P. V. Gel'd, A. I. Pashkov, and S. K. Chuchmarev (S. M. Kirov Ural Polytech. Inst.). *Doklady Akad. Nauk S.S.R.* 91, 1115-17 (1953).—The mutual solv. of  $\text{CaCO}_3$  and  $\text{CaO}$  was studied at  $\sim 17^\circ$  by the x-ray structural method (i.e., the precise detn. of lattice parameters of the pure components and of the products from the partial decompn. of the carbonate). The wt. % of  $\text{CaO}$  was varied from 0 to 100. The exptl. results show that  $\text{CaCO}_3$  is only negligibly sol. in  $\text{CaO}$ . A soln. of 1%  $\text{CaO}$  in  $\text{CaCO}_3$  changes the parameters of the latter. J. Rovtar Leach

(2)

CHUCHMAREV, S.K., YESIN, O.A., BARMIN, L.N.

"Gas Permeability of Liquid Slags,"  
lecture given at the Fourth Conference on Steelmaking, A.A. Baikov Institute of  
Metallurgy, Moscow, July 1-6, 1957

YESIN, O.A.; VORONTSOV, Ye.S.; CHUCHMAREV, S.K.

Diffusion of phosphorus and calcium in the fusions  $\text{CaO} - \text{Al}_2\text{O}_3$  -  
 $\text{SiO}_2$  and  $\text{CaO} - \text{P}_2\text{O}_5$ . O.A. Zhur. fiz. khim. 31 no.10:2322-2327  
O '57. (MIRA 11:3)

1.Ural'skiy politekhnicheskiy institut im. S.M. Kirov a.  
(Diffusion) (Phosphorus) (Calcium)

~~CHUCHMAREV, S. K., kand.tekhn.nauk, dotsent; YESIN, O.A., doktor tekhn.nauk, prof.; BARMIN, L.N., inzh.~~

Effect of electric current on the behavior of hydrogen dissolved in liquid metal. Isv. vys. ucheb. zav.; chern.met. no.5:59-64  
Mg '58. (MIRA 11:7)

1. Ural'skiy politekhnicheskiy institut.  
(Metals—Hydrogen content) (Liquid metals)

BARMIN, L.N., inzh.; YESIN, O.A., doktor tekhn.nauk, prof.; CHUCHMAREV,  
S.K., kand.tekhn.nauk, dotsent

Effect of slag composition on the activity of the hydrogen dissolved in it. Izv.vys.ucheb.zav.; chern.met. no.6:65-73 Je '58.  
(MIRA 12:8)

1. Ural'skiy politekhnicheskiy institut. Rekomendovano kafedroy teorii metallurgicheskikh protsessov Ural'skogo politekhnicheskogo instituta.  
(Slag—Analysis) (Hydrogen) (Activity coefficients)

BARMIN, L.N.; YESIN, O.A.; CHUCHMAREV, S.K.

Determining water activity in slag by electrochemical methods.  
Trudy Ural. politekh. inst. no.93:28-38 '59. (MIRA 15:3)  
(Slag) (Water) (Electromotive force)

CHUCHMAREV, S.K.; BARMIN, L.N.

Effect of slag basicity on its penetrability to gas. Trudy Ural.  
politekh. inst. no.93:39-43 '59. (MIRA 15:3)  
(Slag) (Hydrogen-ion concentration)

YESIN, O.A.; POPEL, S.I.; CHUCHMAROV, S.K.

Sulfur removal from slag by electrolysis. Izv.vys.ucheb.zav.: chern.met. no.3:5-9 '60. (MIRA 13:4)

1. Ural'skiy politekhnicheskiy institut.  
(Slag) (Desulfuration)

NOVOKHATSKIY, I.A.; YESIN, O.A.; CHUCHMAREV, S.K.

Methods of determining the diffusion coefficient of hydrogen in  
molten slags. Izv.vys.ucheb.zav.; chern.met. no.4:5-14 '61.

(MIRA 14:4)

1. Ural'skiy politekhnicheskiy institut.  
(Slag) (Activity coefficients) (Hydrogen)

CHUCHMAREV, S.K.; YESIN, O.A.; BARMIN, L.N.

Cathodic behavior of hydrogen dissolved in molten oxides. Izv. vys. ucheb. zav.; chern. met. 4 no.8:9-17 '61. (MIRA 14:97)

1. Ural'skiy politekhnicheskiy institut.  
(Slag) (Hydrogen-ion concentration)

NOVOKHATSKIY, I.A.; YESIN, O.A.; CHUCHMAREV, S.K.

Mechanism of hydrogen diffusion in slags. Izv. vys. ucheb. zav.;  
chern. met. 4 no.10:10-18 '61. (MIRA 14:11)

1. Ural'skiy politekhnicheskiy institut.  
(Diffusion) (Slag)

NOVOKHATSKIY, I.A.; YESIN, O.A.; CHUCHNAREV, S.K.

Hydrogen solubility in molten slags. Izv. vys. ucheb. zav.; chern.  
met. 4 no.11:22-29 '61. (MIRA 14:12)

1. Ural'skiy politekhnicheskiy institut.  
(Slag) (Hydrogen)

*CHUCHAREV, S. K.*  
NOVOHATSKI, I. A. [Novokhatskiy, I. A.]; ESIN, O. A. [Yesin, O. A.];  
CHUCHAREV, S. K. [Chuchmarev, S. K.]

A method of determining the diffusion coefficient of hydrogen in  
melted slag. *Analele metalurgie* 15 no.4:5-15 O-D '61.

(Slag) (Hydrogen) (Diffusion)

S/020/61/136/004/022/026  
B028/B060

AUTHORS: Novokhatskiy, I. A., Yesin, O. A., and Chuchmarev, S. K.  
TITLE: Diffusion of Hydrogen in Molten Slag  
PERIODICAL: Doklady Akademii nauk SSSR, 1961, Vol. 136, No. 4,  
pp. 868-870

TEXT: Data available in the literature concerning the mass transfer of hydrogen in molten slag indicate very high values ( $10^{-3} - 10^{-2} \text{ cm}^2 \text{ sec}^{-1}$ ). These data were obtained under the conditions prevailing in open-hearth furnaces, and rather stand for convection than for molecular diffusion  $D_H$ . To eliminate convection entirely and to approach the value for  $D_H$ , a nonsteady diffusion was used in the present work. An  $\text{Al}_2\text{O}_3$  test tube contained a thin layer of viscous, liquid slag ( $\delta = 1.5 \text{ mm}$ ,  $\eta = 3 - 100$  poises,  $1410 - 1608^\circ\text{C}$ ) of the composition 16.5 - 53.0%  $\text{CaO}$ , 8.2 - 41.0%  $\text{Al}_2\text{O}_3$ , 6.0 - 58.3%  $\text{SiO}_2$ . Dried nitrogen was blown through to convey the water liberated from the slag to a hygrometer. The dew point was used to calculate the rate of water yielded by the slag. ✓

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## Diffusion of Hydrogen in Molten Slag

S/020/61/136/004/022/026  
B028/B060

$Q_\tau / Q_0 \approx 1 - 8/\pi^2 e^{-\theta}$  (1). If  $\theta$  is known, it is possible to calculate the diffusion coefficient.  $D_H = \frac{4\theta^2}{\pi^2 \tau}$  (2). The values found for  $D_H$  assuming

three thicknesses of the slag layer (1.3; 1.8; and 2.6 mm) proved to be very high ( $1.0; 1.1; 0.9 \cdot 10^{-5}$  cm<sup>2</sup>/sec).  $V_{H_2O}$  was not dependent upon the layer thickness. The fact that convection played no role in the experiment was checked with Lin' Tszya-tszyao (Ref. 3) and confirmed. The  $D_H$  found thus characterized the molecular diffusion of  $H_2$  which was assumed to diffuse through the slag in the form of protons, and to pass over from one oxygen atom to another. This transition takes place only if the distance to the adjacent O atom does not exceed 2.65 Å, as occurs with  $SiO_2$  ( $d = 2.64$  Å).  $D_H$  was practically constant in slag with 56.4%  $SiO_2$ .  $D_H$  rises with an increase of CaO and so does the activation energy. Due to

$$D = 2.72 \frac{kT}{h} \lambda^2 \exp(\Delta S^*/R) \exp\left(\frac{-E}{RT}\right). \quad (\Delta S^* = \text{activation entropy}, \lambda \text{ distance})$$

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Diffusion of Hydrogen in Molten Slag

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B028/B060

between the equilibrium states of the moving particle),  $D_H$  and  $E$  may then increase at the same time, if  $\lambda$  rises.  $\lambda$  rises in CaO (lattice distance of the O atoms = 3.41 Å). In the case of slag rich in CaO,  $D_H$  amounted to  $2.05 \cdot 10^{-5} \text{ cm}^2/\text{sec}$ ,  $E = 20800 \text{ cal/mole}$ . There are 3 figures and 16 references: 10 Soviet, 4 US, 1 Canadian, and 1 British.

ASSOCIATION: Ural'skiy politekhnicheskiy institut im. S. M. Kirova, Sverdlovsk (Ural Polytechnic Institute imeni S. M. Kirov, Sverdlovsk) ✓

PRESENTED: July 20, 1960, by A. N. Frumkin, Academician

SUBMITTED: July 9, 1960

Card 3/3

CHUCHMAREV, S.K.; YESIN, O.A.; DOBRYDEN', A.A.

Oxidation kinetics of slag sulfur by gaseous oxygen. Izv. vys. ucheb. zav.; chern. met. 5 no.7:12-18 '62. (MIRA 15:8)

1. Ural'skiy politekhnicheskiy institut.  
(Sulfur) (Oxidation)

CHUCHMAREV, S.K.; YESIN, O.A.; DOBRYDEN', A.A.

Effect of the electrode polarization on the properties of the  
electrolyte-gas boundary. Dokl. AN SSSR 144 no.5:1100-1102  
Je '62. (MIRA 15:6)

1. Ural'skiy politekhnicheskiy institut imeni S.M.Kirova.  
Predstavleno akademikom A.N.Frumkinyem.  
(Sulfur) (Combustion) (Polarization (Electricity))

CHUCHMAREV, S.K.; YESIN, O.A.; NOVOKHATSKIY, I.A.

Hydrogen permeability through molten slags. Izv. vys. ucheb. zav.; chern. mat. 5 no.10:5-13 '62. (MIRA 15:11)

1. Ural'skiy politekhnicheskiy institut.  
(Slag) (Hydrogen)

DOBRYDEN', A. A.; YESIN, O. A.; CHUCHMAREV, S. K.

Kinetics of the burning out of sulfur in slags during the  
passage of a direct electric current. Izv. vys. ucheb. zav.,  
chern. met. 5 no.12:12-19 '62. (MIRA 16:1)

1. Ural'skiy politekhnicheskiy institut.

(Slag—Sulfur content) (Electrolysis)

CHUCHMAKOV, S.K.; DOBRYIKOV, A.A.

Using electrical current to intensify the burning out of  
sulfur in slags. Sver. nauch. trud. Ural. politekh. inst.  
no.126:34-48 '63  
(MTRR 17e8)

DOBRYDEN', A.A.; YESIN, O.A.; CHUCHMAREV, S.K.

Effect of alternating current on the rate of the burning-out of  
sulfur from slag. Izv. vys. ucheb. zav.; chern. met. 6 no.3;  
20-25 '63. (MIRA 16°5)

1. Ural'skiy politekhnicheskiy institut.  
(Desulfuration) (Electric currents, Alternating)

CHUCHMAREV, S.K.; YESIN, O.A.

Form of hydrogen existence in molten slags. Izv. vys. ucheb. zav.;  
chern. met. 6 no.4:12-19 '63. (MIRA 16:5)

1. Ural'skiy politekhnicheskiy institut.  
(Slag—Testing) (Hydrogen ion concentration)

CHUCHMAREV, S.K.; YESIN, O.A.; PASTUKHOV, E.A.

Form in which trivalent iron ions occur in molten silicates. Dokl.  
AN SSSR 150 no.5:1094-1096 Je '63. (MIRA 16:8)

1. Ural'skiy politekhnicheskiy institut im. S.M.Kirova.  
Predstavлено академиком A.N.Frumkinyem.  
(Iron compounds) (Silicates)

DOBRYDEN', A. A.; YESIN, O. A.; CHUCHMAREV, S. K.

Intensifying the desulfuration of cast iron by the electrolysis  
of slag. Izv. vys. ucheb. zav.; chern. met. 7 no.6:11-16 '64.  
(MIRA 17:7)

1. Ural'skiy politekhnicheskiy institut.

DOBRYDEN', A.A.; YESIN, O.A.; CHUCHMAREV, S.K.

Kinetics of the desulfurization of pig iron and slag by direct  
and alternating currents. Izv. vys. ucheb. zav.; chern. met. 7  
no.2:5-12 '64. (MIRA 17:3)

1. Ural'skiy politekhnicheskiy institut.

KAMYSHOV, V.M.; YESIN, O.A.; CHUCHMAREV, S.K.

Nitrogen solubility in iron-free slags. Izv. vys. ucheb. zav.;  
chern. met. 7 no.7:24-28 '64 (MIRA 17:8)

1. Ural'skiy politekhnicheskiy institut.

CHUCHMAREV, S.K.; YESIN, O.A.; KAMYSHOV, V.M.; DOBRYDEN', A.A.

Kinetics of nitrogen dissolution in fused iron-free slags.  
Izv. vys. ucheb. zav.; chern. met. 7 no.9:11-15 '64.

1. Ural'skiy politekhnicheskiy institut. (MIRA 17:6)

DOERYDEN', A.A.; YESIN, O.A.; CHUCHMAREV, S.K.

Electrochemical desulfuration of varying basicity slags.  
Izv. vys. ucheb. zav.; chern. met. 7-nj.11:21-23 '64.

1. Ural'skiy politekhnicheskiy institut.

(MIRA 17:12)

CHUCHMAREV, S.K.; KAMYSHOV, V.M.

Chizhevskii method applied to determine nitrogen in slags. Zav.  
lab. 30 no.9:1068-1069 '64. (MIRA 18:3)

1. Ural'skiy politekhnicheskiy institut imeni Kirova.

PASTUKHOV, E.A.; YESIN, O.A.; CHUCHMAREV, S.K.

Particular characteristics of the diffusion of iron ions in molten  
aluminosilicates. Elektrokhimiia 1 no.1:78-83 Ja '65. (MIRA 18:5)

1. Ural'skiy politekhnicheskiy institut im. S.M. Kirova.

PASTUKHOV, E.A.; YESIN, O.A.; CHUCHNAREV, S.K.

Form of ions present in molten slags. Zhur. fiz. khim. 38  
no.5:1306-1310 My '64. (MIRA 18:12)

1. Ural'skiy politekhnicheskiy institut. Submitted June 8, 1963.

KAMYSHOV, V.M.; YESIN, O.A.; CHUCHMAREV, S.K.; DOBRYDEN', A.A.

Effect of the electric current on the rate of nitrogen dissolution  
in molten oxides. Elektrokhimiia 1 no.2:227-230 F '65.

1. Ural'skiy politekhnicheskiy institut imeni Kirova.  
(MIRA 18:6)

CHUCHMAREV, S.K.; YESIN, O.A.; KAMYSHOV, V.M.

Form of nitrogen existing in molten nonferrous slags. Izv. vys. ucheb. zav.; chern. met. 8 no.2:5-9 '65.

1. Ural'skiy politekhnicheskiy institut.

(MIRA 18:2)

TIKHONOV, A.I., CHUCHMAREV, S.K., SMIRNOV, V.I., akademik

Kinetic regularities in the oxidation of lower nickel sulfide in a fluidized bed. Dokl. AN SSSR 163 no.3:686-689 J1 '65. (MIRA 18:7)

1. Ural'skiy politekhnicheskiy institut im. S.M.Kirova. 2. AN KazSSR (for Smirnov).

PASTUKHOV, E.A. (Sverdlovsk); YESIN, O.A. (Sverdlovsk); CHUCHMAREV, S.K.  
(Sverdlovsk)

Kinetics of the oxidation of divalent iron in slag by gaseous  
oxygen. Izv. AN SSSR. Met. no.4:51-56 Jl-Ag '65.

(MIRA 18:8)

L 16133-66 EPF(n)-2/EWP(k)/EWT(m)/ETC(f)/EWG(m)/EHA(d)/EWP(e)/EWP(t)  
ACC NR: AP6004185 IJP(c) SOURCE CODE: UR/0076/66/040/001/0262/0263  
WH/WW/JD/JG/WB

AUTHOR: Kamyshov, V. M.; Yesin, O. A.; Chuchmarev, S. K.

ORG: Ural Polytechnic Institute im. S. M. Kirov (Ural'skiy politekhnicheskiy institut)

TITLE: Wetting of transition metal nitrides by molten oxides and metals

SOURCE: Zhurnal fizicheskoy khimii, v. 40, no. 1, 1966, 262-263

TOPIC TAGS: nitride, transition metal, copper, iron, calcium oxide, aluminum oxide,  
silicon dioxide, carbony alloy, surface tension, wetting

ABSTRACT: The contact angle  $\theta$  of wetting of transition metal (Ti, V, Nb, Cr, Mo, Zr) nitrides by copper, iron (99.9% Fe), iron-carbon alloy (0.5% C), ShKh-15 steel, and molten oxides (I - 50% CaO, 50% Al<sub>2</sub>O<sub>3</sub>; II - 40% CaO, 40% SiO<sub>2</sub>, 20% Al<sub>2</sub>O<sub>3</sub>) was measured at 1500 - 1550°C by the sessile drop method. The contact angle of wetting by copper of solid transition metal nitrides was found to be large and independent of the nature of the nitride. On the contrary, in the case of wetting by iron, steel, and oxide

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UDC: 541.17

L 16133-66

ACC NR: AP6004186

melts,  $\theta$  decreases with increasing acceptor capacity criterion  $1/Nn$ , where  $n$  is the number of electrons in the d subshell and  $N$  is the principal quantum number of the d-subshell level. As the different nitrides are considered, differences observed in the change of  $\theta$  from one case to another are due to both the surface tension and the interfacial tension at the solid-liquid interface. Orig. art. has: 1 figure and 1 formula.

SUB CODE: 07/1 SUBM DATE: 10May65/ ORIG REF: 003

Liquid metal

Card 2/2

CHUCHLIO, E.

Shielded arc welding of thin steel sheets. p. 246.  
PRZEGŁAD SPAWALNICTWA, Warszawa, Vol. 6, no. 11, Nov. 1954.

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, no. 10, Oct. 1955,  
Uncl.

1427 821.791.75 : 821.791.54 : 020.179.3  
Chuchro E. Powders and Wire Electrodes for Automatic Covered-Arc Welding

„Proszki i druty do automatycznego spawania lukiem krytym”.  
Przeglad Spawalnictwa, No. 8, 1954, pp. 172-174.

The Welding Institute has developed two kinds of powders and two kinds of wire electrodes for the automatic welding of low-carbon steels by covered arc technique. The powders consist chiefly of compound aluminium silicides of magnesium and calcium, together with small quantities of calcium fluoride and alkalis. The granulation of powders for welding sheets not exceeding 8 to 15 mm amounts to less than 1.5 mm, but finer powders should be used for welding thicker sheets. Two kinds of wire electrodes containing from 1.5 to 1.9 per cent manganese were developed for two varieties of fluxes of a varying degree of basicity ( $\text{CaO} + \text{MgO} : \text{SiO}_2$ ). A concise outline is given of the technology of flux production.

POL.

CHUCHUKALO, A.I.

Change in the amount of lipids, cholesterol, and ascorbic acid  
in the adrenal cortex of rats after lesions due to polonium and  
X irradiation. Med. rad. 5 no.8:37-41 '60. (MIRA 13:12)  
(RADIATION SICKNESS) (ADRENAL CORTEX)

COUNTRY	:USSR
CATEGORY	:General Problems of Pathology. Inflammation
ABSTRACT JOUR.	: RZBiol., No. 12 1958, No. 56175
AUTHOR	:Chuchukala, A. A.
INST.	:-
TITLE	:The Influence of Inflammation on the Phagocytic Reaction of the Reticulo-Endothelial System following Polonium Injury of Animals
ORIG. PUB.	:Tr. Vses. Konferentsii po Med. Radiol. Klin. Experim. Med. Radiol. Moscow, Medgiz, 1957, 174-176
ABSTRACT	:Mice were injected subcutaneously with polonium (P; 0.005 microcuries each). Inflammation was induced by the subcutaneous injection of turpentine. The phagocytic activity (PA) of the RE system was appraised by observations of the uptake by liver RE cells of intraperitoneally-injected 1% solution of trypan blue or of India ink at 1, 5, and 10 days after the injection of P or of turpentine. The PA increased with the development of inflammation. With injury due to P alone, the PA was inhibited for the first five days and on the 10th to 15th days, but was above normal on the 5th to 10th
CARD:	1/2

CATEGORY	:	
ABS. JOUR.	:	R2Biol., No. 1959, No.
AUTHOR	:	
TYPE	:	
CLASS	:	
ORIG. PUB.	:	
ABSTRACT	:	days. Comparable changes were seen in the PA upon simultaneous injection of P and turpentine, and also upon the development of inflammation 3 days after the onset of radiation. With injury on a background of 3-day inflammation, the PA occurred at a more rapid rate than in the case of P injury alone, but somewhat less markedly than with inflammation alone. --I.A.Oyvin
CARD	:	2/2

## AUTHORS:

Berezin, I. V., Makalets, B. I.,  
Chuchukina, L. G.

SOV/79-28-10-19/60

## TITLE:

Mechanism of the Oxidation of the Acids With Molecular Oxygen  
in the Medium of n-Heptane (Mekhanizm okisleniya kislot  
molekulyarnym kislorodom v srede n-geptana)

## PERIODICAL:

Zhurnal obshchey khimii, 1958, Vol 28, Nr 10, pp 2718-2723  
(USSR)

## ABSTRACT:

From the papers known on the oxidation of acids with bound  
and air oxygen in the presence of catalysts (Refs 1-4) it may  
be seen that the oxidation mechanism of the acids depends on  
the conditions of the experiments. Therefore the rules  
governing the oxidation of the single acids in the presence  
of catalysts with different oxidizing agents may not be  
extended without earlier examination to the case where the  
oxidation of the acids takes place in the medium of an  
oxidizing hydrocarbon. It was of interest to the authors to  
investigate the chemical nature of the oxidation of acids in  
this respect, to compare it with data in publications and thus  
to discover the fundaments of the oxidation mechanism in  
dependence on the character of the reaction and the structure

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Mechanism of the Oxidation of the Acids With  
Molecular Oxygen

SOV/79-28-10-19/60

of the acid molecules. As the acids are not only used up in the reaction process but also are formed as such as a consequence of the oxidation of hydrocarbon, the favorable solution of this problem consists of employing the method of isotopic indicators. A simple method was chosen that made the analytical part of the work considerably easier, i. e. the oxidation of n-butyric and n-valeric acid in n-heptane medium. To observe the behaviour of the functional group as well as that of the hydrocarbon chain of the acid an n-butyric acid with radioactivated carbon in the carboxyl, and an n-valeric acid radioactivated in the  $\alpha$ -position were synthesized. Moreover, an acetic acid was produced that was radioactivated in the carboxyl in order to prove its oxidizability under the conditions given. Concluding, the following results are mentioned: The acids are subjected to a quantitative decarboxylation in the medium of the oxidizing hydrocarbon. In the activation of the carboxyl with radioactivated carbon  $\text{CO}_2$  is the only active gaseous reaction product. According to this separated gas the behaviour of the acid carboxyl in any complex system of the oxidation products of hydrocarbons can be classified. The oxidizing reagent attacks the acid/molecule

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Mechanism of the Oxidation of the Acids With  
Molecular Oxygen

SOV/79-28-10-19/60

at the  $\beta$ -carbon atom. In the decarboxylation of the acid a methyl ketone is formed that has one carbon atom less than the acid. The oxidizability of the acid depends on its structure. The acetic acid is practically inert. The yield of the n-valeric acid activated with radioactivated carbon in the  $\alpha$ -position amounted to 23 %. There are 1 table and 9 references, 3 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet  
(Moscow State University)

SUBMITTED: August 8, 1957

Card 3/3

CHUCHUKINA, L.G.

SOV/3663

Oxidation of Hydrocarbons in the (Cont.)

Knorre, D.G., L.G. Chuchukina, and N.M. Emanuel' [Institute of Chemical Physics]. Dual Function of Metal Stearates in the Hydrocarbon Oxidation Reaction

145

The dual role of copper and manganese stearates as both catalysts and inhibitors of oxidation of iso- and n-decane is described. The authors determine the critical concentration of cupric stearate ( $\sim 0.03\%$  per mole) above which the induction period for n-decane oxidation increases.

Mayzus, Z.K., L.G. Privalova, and N.M. Emanuel' [Institute of Chemical Physics]. Change in the Mechanism of n-Decane Oxidation in the Course of the Reaction

152

The authors have used  $C^{14}$ -tagged n-decane to investigate changes in the rates of formation and consumption of n-decyl hydroperoxides during the oxidation of n-decane. The hypothesis that variations in the activities of radicals carrying on chain reactions are proportional to the accumulation of oxygen-containing oxidation products in the reacting mixture is offered as a possible explanation of the phenomenon.

Oxidation of Hydrocarbons in the Liquid Phase; Collection of Articles, Moscow, Izd-vo AN SSSR, 1959, 334pp. (Ak. nauk SSSR, Inst. khim. fiziki)

5(4)

AUTHORS: Knorre, D.G., Chuchukina, L. G.,  
Emanuel', N.M. SOV/76-33-4-20/32TITLE: On the Phenomenon of Critical Concentration of  $\text{Cu}(\text{C}_{17}\text{H}_{35}\text{COO})_2$   
in the Reaction of Catalytic Oxidation of n-Decane  
(O yavlenii kriticheskoy kontsentratsii  $\text{Cu}(\text{C}_{17}\text{H}_{35}\text{COO})_2$  v  
reaktsii katalizirovannogo okisleniya n-dekana)PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 4, pp 877 - 882  
(USSR)

ABSTRACT: In the present paper a new example is given of the critical phenomena in reactions with degenerated branchings in liquid phase which were observed in the investigations of n-decane oxidation in the presence of copper stearate (I). At a certain concentration of (I) a complete stop of the reaction was observed while at this concentration a self-accelerated reaction with a small induction period takes place. n-decane (II) was produced electrolytically (Ref 5) and (I) according to a method of production described. (I) and (II) were dissolved in a nitrogen current and the moment where oxygen was introduced was regarded as the beginning of reaction.

Card 1/3

On the Phenomenon of Critical Concentration SOV/76-33-4-20/32  
of  $\text{Cu}(\text{C}_{17\text{H}_{35}}\text{COO})_2$  in the Reaction of Catalytic Oxidation of n-Decane

0.03 - 0.10 mol% of (I) were used and the peroxides, carbonyl compounds, acids, and copper were determined according to the course of oxidation; the latter according to two methods:

$\text{Cu}^{2+}$  and the entire copper. A catalytic effect (Fig 1 for 0.03% (I)) could be observed until a concentration of 0.06 mol% (I) is attained. A change in the copper valency in the induction period is explained by a reaction of (I) with intermediate oxidation products of (II) (e.g. hydrogen peroxides), which causes the self-acceleration proper of the process. The increase of the induction period at an increase of concentration of (I) is indicative of a second- the inhibiting - effect of (I) which apparently is based on a destruction of the chains at the (I)-molecules. The critical concentration is at 0.065 mol% (I) at which the induction period is longer than 15 hours and where the oxidation rate also changes. The phenomenon of the critical concentration of (I) is explained by the radical-chain-mechanism of hydrocarbon oxidation. There are 5 figures, 1 table, and 9 references, 6 of which are Soviet.

Card 2/3

On the Phenomenon of a Critical Concentration      SOV/76-33-4-20/32  
of  $\text{Cu}(\text{C}_{17}\text{H}_{35}\text{COO})_2$  in the Reaction of Catalytic Oxidation of  $\alpha$ -Decane

ASSOCIATION: Akademiya nauk SSSR, Institut khimicheskoy fiziki, Moskva  
(Academy of Sciences of the USSR, Institute of Chemical  
Physics, Moscow)

SUBMITTED: September, 28, 1957

Card 3/3

S/081/61/000/002/002/023  
A005/A105

Translation from: Referativnyy zhurnal, Khimiya, 1961, No. 2, p. 59, # 2B437

AUTHORS: Knorre, D.G., Chuchukina, L.G., Emanuel', N.M.

TITLE: On the Double Function of Metal Stearates in the Oxidation Reaction  
of Hydrocarbons

PERIODICAL: V sb.: "Oksideniye uglevodorodov v zhidkoy faze", Moscow, AN SSSR,  
1959, pp. 145 - 151

TEXT: The spread of the phenomenon of double effect (catalyzing and inhibiting effects) of metals of variable valency which was established with the example of Cu-stearate at the oxidation of n-decane (RZhKhim, 1959, No. 24, # 85348) was studied under the same conditions with the addition of Mn-stearate. It is shown that the induction period is the greater the higher the salt concentration, and that Mn-stearate has, analogous to Cu-stearate, catalyzing and inhibiting functions in the oxidation reaction of n-decane. The inhibiting function of metal stearates was not observed in the oxidation of isodecane. ✓

Translator's note: This is the full translation of the original Russian abstract.  
Card 1/1

Z. Mayzus

5.1190

22.6.9, 1208, 1274

86408

S/062/60/000/008/015/033/XX  
B013/B055

AUTHORS: Vasil'yev, R. F., Kozlova, Z. G., ~~Chuchukina, I. G.~~,  
Shlyapintokh, V. Ya., and Emanuel', N. M.

TITLE: On the Change in Catalytic Activity of Nickel Stearate  
During the Oxidation of Ethyl Benzene

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,  
1960, No. 8, pp. 1337-1341

TEXT: The present publication treats a phenomenon observed during the nickel-disteareate catalyzed oxidation of various hydrocarbons. The authors observed that in these reactions the maximum concentration of the hydroperoxide fairly equals its concentration in an uncatalyzed reaction. It was shown that the anomalous course of the kinetic curve of the hydroperoxide during the oxidation of ethyl benzene is connected with an inactivation of the catalyst. Various experiments were made to establish the cause of the reduced activity of the catalyst during the oxidation process (Figs. 3, 4). These experiments lead the authors to assume that products reacting with the catalyst and reducing its activity are formed during

Card 1/3

86408

On the Change in Catalytic Activity of Nickel S/062/60/000/008/015/033/XX  
Stearate During the Oxidation of Ethyl Benzene B013/B055

the reaction. Since acids accumulate during the oxidation of the decomposition products of hydroperoxide, it seems likely that these very acids inactivate the catalyst, e.g. by forming insoluble salts (Refs. 2-4). Experiments performed in this direction showed that the reduced activity of the catalyst is indeed related to its reaction with these acids (Fig. 5). The established reduction of catalyst activity during the reaction permits a simple explanation for the accumulation of peroxides during the nickel-stearate catalyzed reaction (Figs. 1, 2). Till the maximum peroxide concentration is reached, the nickel salt is completely inactivated. The reaction is then practically uncatalyzed and the maximum peroxide concentrations are therefore in agreement. At the same time the maximum concentration is reached more quickly in the presence of nickel stearate since the latter has a strong catalytic effect at the outset of the reaction. The results of this investigation furnish further proof that in the catalytic oxidation of hydrocarbons metal salts are no catalysts but rather initiators of the process. Their activity, and frequently also the mechanism of their effect, change during the process. The observed reaction kinetics therefore reflect not only the properties of the reacting system, but also the changes in the activity and action of the catalyst in the

Card 2/3

On the Change in Catalytic Activity of Nickel Stearate During the Oxidation of Ethyl Benzene

86408  
S/002/60/000/008/015/033/XX  
B013/B055

individual stages of the reaction. In studies of the catalytic mechanism, stabilization of the catalyst is particularly important. This would considerably facilitate the explanation of the mechanism of the catalytic effect of metal salts. There are 6 figures and 4 references: 3 Soviet and 1 British.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR  
(Institute of Chemical Physics of the Academy of Sciences  
USSR) ✓

SUBMITTED: February 18, 1959

Card 3/3

CHUCHULEV, Angel, inzh.

Supplying Sofia with pure, tasty, and high-mountain water from  
the "Planshtitsa" reservoir. Khidrotekh i melior 9 no.6:180-  
182 '64.

CHUCHULEV, Angel, inzh.

Possibilities of constructing the Sandanska Bistritsa Hydroelectric Power System. Khidrotekh i melior 9 no.10:293-295 '64.

NEROBINA, N. (Nal'chik); CHUCHULIN, P. (Nal'chik)

Organizing extracurricular work on local geography by means of  
radio. Geog. v shkole 25 no.4:55-58 Jl-Ag '62. (MIRA 15:8)  
(Kabardino-Balkar A.S.S.R.--Geography--Study and teaching)  
(Radio in education)

CHUCHULIN, P.P.; YERMOLAYEV, A., ofitser-topograf zapasa (g.Ul'yanovsk);  
PETRENKO, V.V. (g.Odessa)

Problems requiring discussion. Geog.v shkole 22 no.3: 76-80  
My-Je '59.  
(MIRA 12:11)

1. Kabardino-Balkarskaya ASSR (for Chuchulin).  
(Geography--Study and teaching)

CHUCHUMOV, M. A. , Cand Med Sci -- (diss) "Chronaximetric studies of the vestibular and <sup>visual</sup> ~~optical~~ analyzers in certain mental diseases." Ivanovo, 1958. 11 pp (Ivanovo State Med Inst. Chair of Psychiatry). 200 copies.  
(KL, 12-58,103)

-103-

L 10072-67 E.P.(n) DS/EM  
ACC NR: AP6029926 (A)

SOURCE CODE: UR/0413/66/000/0015/0089/0090

INVENTORS: Kolesnikov, G. S.; Tovlina, A. S.; Chuchun, A. Yo.; Barabashkina, I.  
A.; Yushannova, V. A.

ORG: none

TITLE: Method for obtaining porous sulfo-ion-exchange resin. Class 39, No.  
184450V Announced by Moscow Institute of Chemical Technology imeni D. I.  
Mendeleev (Moskovskiy khimiko-tehnologicheskiy institut)

SOURCE: Izobret prom obraz tov zn, no. 15, 1966, 89-90

TOPIC TAGS: ion exchange resin, polymerization, porosity, polymer, resin

ABSTRACT: This Author Certificate presents a method for obtaining a porous sulfo-ion-exchange resin by graft copolymerization of styrol and a polymer containing isopropyl groups in the presence of a free-radical type initiator and of divinyl benzene as the cross-linking agent. The polymerization is followed by sulfonation with either sulfuric acid or weak oleum. To obtain a polymer with different porosity (capable of sorbing large organic ions), polyarylenealkyl is used as the isopropyl-group-containing polymer.

SUB CODE: 11/ SUBM DATE: 05Feb65

Card 1/1 UDC: 661.183.123.2:62-405.8:678.746.22-139:66.094.403

PONOMARENKO, A.A.; LITVINENKO, S.P.; SOLOV'YEVA, T.Ye.; CHUCHUPAK, V.D.

Chemiluminescence method for investigating the mixing and flow  
of fluids. Dop. ta pov. L'viv. un. no.5 pt.2:88-89 '55.

(MLRA 9:10)

(Luminescence) (Hydrodynamics)

PONOMARENKO, A.A.; LITVINENKO, S.P.; SOLOV'YEVA, T.Ye.; CHUCHUPAK, V.I.  
Chemiluminescence method for investigating the mixing and flow of  
liquids. Zav.lab.22 no.7:832-833 '56. (MLRA 9:12)  
(Fluid dynamics) (Luminescence)

CHUCHUPAKA, K. D.

Chuchupaka, K. D.

"Geodetic Work in the Complex Mechanization of Earth Work on Large Hydraulic Constructions (The Example of Constructing the Kakhovka Hydroelectric Power Plant)." Min Higher Education USSR. Khar'kov Order of Labor Red Banner Agricultural Inst imeni V. V. Dokuchayev. Chair of Geodesy. Khar'kov, 1955 (Dissertation for the degree of Candidate in Technical Sciences)

SO: Knizhnaya letopis' No. 27, 2 July 1955

CHUCHUPALOV, V.A.

Paste-preparing machine for poultry and swine. Mekh. sil'. hosp.  
12 no. 2:25 F '61. (MIRA 14:4)

1. Glavnnyy inzh. sovkhoza No.8 im. Ordzhonikidze, Stalinskoy obl.  
(Poultry—Feeding and feeds) (Swine—Feeding and feeds)

CHUCHUPALOV, V.A.

Electric hot water heating with thermostat control for dwellings.  
Mekh. sili. hosp. 12 no.9:25 S '61. (MIRA 14:11)

1. Glavnnyy inzh. opytno-pkazatel'nogo sovkhosa im.  
Ordzhonikidze, Stalinskoy oblasti.  
(Hot-water heating)

MIKHAYLOV, P.G., kand.tekhn.nauk; CHUCHUSHKOV, M.K., inzh.; KUZ'KIN, V.A., inzh.

Increasing the efficiency of the system of working inclined layers  
with filling. Sbor. KusNIUI no.9:20-42 '61. (MIRA 16,5)  
(Kuznetsk Basin--Coal mining and mining) (Mine filling)

L 19755-65 EPA(s)-2/EMT(m)/EWP(t)/EWP(b) Pt-10 IJP(c)/AEDC(b)/SSD/SSD(c)/AFWL/  
ASD(a)-5/RAEM(i)/RAEM(j)/ESD(gs)/ESD(t) JD/JC/MLK S/0000/64/000/000/0085/0087  
ACCESSION NR: AT5000424

AUTHOR: Lazebnaya, G.V., Romova, M.G., Chuchuyeva, R.

TITLE: Increasing the sensitivity of the flame-photometric determination of rubidium  
in cesium salts

SOURCE: Sibirskoye soveshchaniye po spektroskopii. 1st, Kemerovo, 1962. Spektro-  
skopiya; metody\* i primeneniye (Spectroscopy; methods and application).  
Doklady\* soveshchaniya. Moscow, Izd-vo Nauka, 1964, 85-87

TOPIC TAGS: spectroscopy, flame photometry, rubidium determination

ABSTRACT: Using flame photometry, the authors determined rubidium in high-purity  
cesium chloride and cesium nitrate. The emission intensity of rubidium in the flame  
was increased 60-70% by the addition of 10 vol. % ethyl alcohol to the cesium salt  
solution; this made it possible to determine 0.001-0.0008% rubidium in the dry cesium  
salt. The behavior of the analytical lines of rubidium at 7800-7948 Å upon the addition  
of sodium chloride and ethyl alcohol was analyzed. On the basis of this study, the  
determination of rubidium was carried out by using the 7800 Å line. The method was  
checked by introducing known amounts of rubidium. The sensitivity achieved,  $0.8-1 \times 10^{-3}$ ,  
is not the maximum attainable value. The authors suggest the use of certain

Card 1/2

L 19755-65

ACCESSION NR: AT5000424

instruments which will raise the sensitivity still further. Orig. art. has: 2 figures and  
1 table. 0

ASSOCIATION: none

SUBMITTED: 09 May 64 ENCL: 00

SUB CODE: GC

NO REF SOV: 002 OTHER: 004

Card 2/2

SKLYAR, V.T., kand.khim.nauk; SABIROVA, G.V., kand.khim.nauk; ZHURBA,  
A.S., kand.khim.nauk; ROZHIN, V.P., inzh.; GONOPOL'SKIY, L.Ye.,  
inzh.; ZVEREVA, A.D., inzh.; CHUCHVARA, P.G., inzh.; Prinimali  
uchastiye: KOVAL'CHUK, L.V.; TERENT'YEVA, V.N.; VEDERNIKOVA, V.T.

Production of the MF-12 freon oil from Anatas'yevka petroleum.  
Nauch.zap.Ukrainproekta no.8148-57 '62. (MIRA 16:1)  
(Freons) (Lvov—Petroleum—Refining)

SABIROVA, G.V.; MAN'KOVSKAYA, N.K.; PORUTSKIY, V.P.; TERENT'YEVA, V.N.; KOVAL'CHUK, L.V.; LEBEDEVA, L.B.; ROZHIN, V.P.; GONOPOL'SKIY, L.Ye.; CHUCHVARA, P.O.

Studying petroleum growth-promoting substances in the petroleum refineries of the Ukraine. Nefteper. i neftekhim. no.7:13-16 '64.

1. UkrNIIgiproneft' i L'vovskiy neftepererabatyvayushchiy zavod. (MIRA 17:11)

JEDLICKA, Jaroslav; CHUDACEK, Frantisek

Carbon tetrachloride poisoning. Vnitr. lek., Brno 1 no.5;  
339-344 May 55.

1. Z vnitri kliniky, prednosta doc. MUDr. Karel Bobek a z  
oddeleni pro choroby z povolani KUMZ, prednosta MUDr.  
Frantisek Chudacek, v Plzni. Praha XIII, Tr. SNB 694.

(CARBON TETRACHLORIDE, poisoning  
diag.,)

(POISONING

carbon tetrachloride, diag.)

CHUDACEK, Frant., MUDr.; SRUTEK, Josef, MUDr.

Method of work hygiene and prevention of occupational disease  
at the health center in the Lenin Works in Plzen. Pracovni lek.  
8 no.5: 369-372 Oct 56.

1. Zavodni ustav narodniho zdravi pri Leninovych zavodech v  
Plzni, reditel MUDr. Fr. Chudacek.  
(INDUSTRIAL HYGIENE,  
health centers in indust. in Czech. (Cz))

21(3,4)

PHASE I BOOK EXPLOITATION

CZECH/2404

Habanec, V., Doctor; J. Havelka, Engineer; Zd. Hlasivec,  
Doctor of Medicine; Zb. Hrdlička, Engineer; I. Chudáček  
(Graduate in Physics); V. Kouřím, Engineer; J. Kuba,  
Doctor of Natural Sciences; V. Myslivec, Professor; Jan  
Tůma, Engineer; and M. Voríšek (Graduate in Physics)

Atom a Jaderná technika (The Atom and Nuclear Engineering)  
Praha, Naše vojsko, 1957. 290 p. (Series: Universita  
vojáka) 4,000 copies printed.

Reviewers: Bittner, Engineer; Dráka, Engineer; Hrdlička,  
Engineer; Kulka, Engineer; Spurný, Doctor; and Simánek,  
Engineer; Ed.: Stanislav Voboril.

PURPOSE: The book is intended for the general reader.

COVERAGE: The book outlines the principles and operation of  
nuclear power plants and the use of radioisotopes. The intro-  
ductory chapters cover the fundamentals of nuclear physics and  
radioactivity. Several subsequent chapters deal with reactor  
physics, types of reactors, their engineering, control and  
Card 1/12

## The Atom and Nuclear Engineering

CZECH/2404

instrumentation. Operating and planned nuclear power installations are described. A short chapter is devoted to the possibility of using nuclear power in transportation. The remaining chapters report on radioisotopes for industry, and on radiology, radiation hazards and safety measures. No personalities are mentioned. There are 25 references, all Czech.

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CZECH/2404

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AVAILABLE: Library of Congress

Card 12/12.

TM/ec

10-12-59

CZECHOSLOVAKIA/Nuclear Physics - Installations and Instruments. C  
Methods of Measurement and Research

Abs Jour : Ref Zbir Fizika, No 10, 1959, 21934  
Author : Chudacek, Ivo  
Inst : Charles University, Prague, Czechoslovakia  
Title : Energy Spectrum of Alpha Particles Emitted from Sources  
of Different Thicknesses  
Orig Pub : Chekhosl. fiz. zh., 1958, 8, No 4, 396-403  
Abstract : An investigation was made of the energy distribution of  
alpha particles emitted by sources of different thick-  
nesses. A semi-empirical formula is obtained for the  
energy distribution  $N(E)dE$  and is in satisfactory  
agreement with the results of the experiment. The sour-  
ce of alpha particles is powdered  $U_3O_8$ , from which layers  
of various thicknesses were obtained by precipitation

Card 1/2

CZECHOSLOVAKIA/Nuclear Physics - Installations and Instruments. C  
Methods of Measurement and Research

Abs Jour : Ref Zhur Fizika, No 10, 1959, 21934

in ether. The spectrum of the alpha particles was measured in nuclear emulsion "Agfa" K2 (200 microns). The nucleon emulsion was superimposed directly on the  $U_3O_8$  film and exposed for 12 hours. The spectrum of five sources was measured with thicknesses from 0.15 to 70 mg/cm<sup>2</sup>. The total number of the measured tracks of alpha particles amounted to 3592. The formula obtained for the energy distribution can be used also for alpha particles emitted from other sources, for example, from Ra. --

N.I. Petukhova

Card 2/2

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C  
CZECHOSLOVAKIA/Nuclear Physics - Installations and Instruments.  
Methods of Measurement and Research

Abs Jour : Ref Zhur Fizika, No 11, 1959, 24374

Author : Drskay Ladislav; Chudacek, Ivo; Sterba, Frantisek

Inst : Charles University, Prague, Czechoslovakia

Title : Measurements of Certain Neutron Spectra by the Method  
of Nuclear Emulsions

Orig Pub : Ceskosl. casop. fys., 1958, 8, No 5, 589-598

Abstract : Using tracks of recoil protons in a nuclear emulsion,  
the author has determined experimentally the energy  
spectrum of the neutrons from a Ra + Be source and the  
reaction Li (d,n) on a thick target. A comparison is  
made of the results obtained with the data of other  
authors. The spectrum of neutrons from a simplified mo-  
del of Ra + Be system is calculated theoretically for

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Measurement of some neutron spectra by the nuclear emulsion method. L. Dráka, I. Chudáček, and F. Šterba. (Karlov Univ., Prague). *Czechoslovak Phys.* 8, 648-57 (1958) [in Russian].—The neutron spectrum is measured of a Ra-Be source. The source contained 50 mg. Ra as  $\text{RaCl}_2$ . The shape of the frequency vs. energy diagram of the neutron spectra is dependent on the exptl. arrangement and layer thickness. Another part deals with the  $\text{Li}^7(d, \nu) \text{Be}^8$  reaction; the shape of the energy spectrum and the energy levels of a  $\text{Be}^8$  nucleus are investigated. An energy level of 5.4 m.e.v. is found in addn. to already known ones. 32 references. A. Kremheller.

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CZECHOSLOVAKIA/Nuclear Physics - Installations and Instruments. C-2  
Methods of Measurement and Research

Abs Jour : Ref Zhur - Fizika, No 4, 1959, No 7476

Author : Chudacek, Ivo  
Inst : Karlovy University, Prague, Czechoslovakia  
Title : Energy Spectrum of Alpha Particles from Sources of Various  
Thickness

Orig Pub : Ceskosl. casop. fys., 1958, 8, No 3, 319-325

Abstract : The energy spectrum of the alpha particles emitted by  
sources of various thicknesses, made of  $U_2O_8$ , were investi-  
gated. The spectrum was measured with an Agfa K2 nuclear  
emulsion 200 microns thick. The actual energy spectrum  $N(E)dE$   
can be approximated by the semi-empirical expression

$$N(E)dE = K (E_0^{3/2} - E^{3/2})^2 E^{\lambda} dE$$

(where  $E_0$  is the initial particle energy, and  $K$  and  $\lambda$  are  
certain constants) which describes well the observed spec-  
trum. -- V.I. Lend'yol

Card : 1/1

Ivo Chudáček

Distr: 4E3c/4E3d

Energy spectrum of  $\alpha$ -particles emitted from sources of different thicknesses. Ivo Chudáček (Karlová Univ., Prague). Czechoslov. J. Phys. 8, 380-403 (1958) (in English).

The energy distribution of  $\alpha$ -particles emitted from a plane  $U_3O_8$  source is measured. The energy distribution  $N(E)dE$  found can be expressed satisfactorily by a semi-empirical formula which is based on Geiger's formula (Segré, *Experimental Nuclear Physics*, 1953, 21) (C.A. 47, 02081) for  $\alpha$ -particle energies from 0 to 8 m.e.v. Altogether 3002 trajectories of  $\alpha$ -particles are investigated in 200- $\mu$  thick nuclear emulsion AGFA K2 of 5 plates.

A. Kremheller

enf

C.H.U.D.A.C.E.K., I.

AUTHORS: Drka, L., Chudáček, I. and Štěrba, V.

TITLE: Measuring of Certain Neutron Spectra by Means of the Method of Nuclear Emulsions (Methodické studium nukleárných spektrů metodou jaderných emulzí)

PERIODICAL: Československý Casopis pro Fyziku, 1958, Mr. 5,

pp. 589-598 (Czech)

**ABSTRACT:** As a part of systematic work aimed at solving certain problems of fast neutron physics, the energy spectrum was measured of two frequently used sources of fast neutrons by means of the method of nuclear emulsions. In the first part of the paper the spectrum is analysed of an Ra + Be source and its characteristic is entered in the neutron spectrum of the Ra + Be source is entered in the graph. In Fig. 1 the neutron spectra are compared. In Fig. 2 the spectra measured by various authors are compared. In Fig. 3 the applied approximation of the spectrum of the  $\alpha$ -particles reacting with beryllium is graphed and also the characteristic of the product  $\text{Be}^{10}$  is given. In Fig. 4 the characteristic of the neutron spectrum of an Ra + Be source is graphed. The measured spectrum of the neutrons from an Ra + Be source is in good agreement with the results obtained by other authors and a

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satisfactory explanation of this spectrum is given in the paper. In the second part of the paper the spectrum is studied of neutrons from a thick lithium target which is bombarded with deuterons. The measurements were made for three sets of test conditions, the basic characteristics of which are summarised in Table 1. In Fig. 5 part of the corrected spectrum of neutrons is graphed for the test arrangement A and a neutron energy of  $E > 5 \text{ MeV}$ . In Fig. 6 the results are graphed of measurements of the neutron spectrum for the arrangement C of Table 1, for the energy range  $E$  between 1 and 11 MeV. The observed results are in satisfactory agreement with results obtained by other authors (see 2-5). From the analysis of the spectra the energy levels were evaluated for the nucleus of  $\text{Be}^{10}$ , the found values are partly consistent with currently applied values, whilst others are in agreement with some more recent measured results. Acknowledgments are made to Prof. Dr. V. Petříčka

for suggesting the subject of this work. There are 6 figures, 3 tables and 41 references, 1 of which is Czech, 2 Soviet, 4 German, 1 Hungarian, 1 Swiss and 32 English.

ASSOCIATION: Fakulta technická a jaderné fyziky Karlovy univerzity, Praha (Faculty of Technical and Nuclear Physics, Charles University, Prague)

SUBMITTED: January 14, 1958

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CHUDACEK, I.

CZECHOSLOVAKIA/Nuclear Physics - Installation and Instrument.  
Methods of Measurement and Research.

C

Abs Jour : Ref Zhur Fizika, No 1, 1960, 349  
Author : Drska, L., Chudacek, I., Sterba, F.  
Inst : -  
Title : Measurement of Certain Neutron Spectra by the Method  
of Nuclear Emulsions  
Orig Pub : Chekhosl. fiz. zh., 1958, 8, No 6, 648-657  
Abstract : See Referat Zhur Fizika, No 11, 1959, 24374.

Card 1/1

CEUDACEK, I.; SODOMKA, L.

The influence of pressure on the luminescence of zinc sulfide  
single-crystals. Chekhosl fiz zhurnal 13 no.3:209-210 '63.

1. Fakulta tehnicke fyziky, Liberec.

CHUDACEK, I.

Approximative formula of the Luminous intensity of  
piezoluminescence. Acta physica Pol 26 no.3/4:599-  
604 S-0 '64.

1. College of Mechanical Engineering, Liberec, Czechoslovakia.

L 21436-66 F#P(t) LIP(c) ID  
ACC NR: AP5013937

SOURCE CODE: CZ/0055/65/015/005/0359/0362

AUTHOR: Chudacek, I.

ORG: Engineering and Textile College, Liberec

TITLE: Periodic triboluminescence of zinc sulfide 71

SOURCE: Chekhoslovatskiy fizicheskiy zhurnal, v. 15, no. 5, 1965, 359-362

TOPIC TAGS: zinc sulfide, triboluminescence, material deformation, luminescent material, solid mechanical property, potential energy, dielectric property, potential energy, dielectric property, thermal excitation, light pulse

ABSTRACT: An investigation of the periodic mechanical excitation of the triboluminescence of ZnS was carried out. It was proved experimentally that periodic triboluminescence can be exerted by periodically supplying deformation energy to a ZnS luminophore. This effect occurs for different types of ZnS luminophores (electroluminophore, photoluminophore) and different activators. The strongest brightnesses occur with an electroluminophore activated by Mn. At high pressures, triboluminescence does not exhibit periodicity. It was found that the periodicity of triboluminescence disappears at a pressure of 700 kg/cm<sup>2</sup>. At lower pressure, the triboluminescence brightness exhibits periodicity, but it is limited in time. This led to the conclusion that even for small pressures, triboluminescence is an irreversible phenomenon of a destructive nature. The creation of triboluminescence

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does not depend on the medium in which the excited luminophore occurs. This was verified on resins and nitrolacquer. The time dependence of triboluminescence depends on the mechanical properties of the surrounding medium. With solid substances (resin), the transfer of mechanical energy is faster. With soft substances (lacquer), the transfer of mechanical energy is slower. The form of triboluminescent light pulses is thus connected with the mechanical properties of the binding agent in which the ZnS is suspended. The conclusion that triboluminescence is a phenomenon of a destructive nature agrees with the work of Stranski and others (G. Wolff, I. Schönewald, I. N. Stranski, Zeit. Kristallogr. Mineralog. Petrog. 106, 1954), who observed the triboluminescence of substances only when the latter were crushed. The second conclusion that triboluminescence does not depend on the dielectric properties of the luminophore's surroundings was expressed in a paper (G. Alzetta, N. Minaya, S. Santucci, Nuovo Cim. XXIII, 1962, 910). In the latter case, the binding agents were various liquids. Orig. art. has: 3 figures. [Based on author's abstract.]

[NT]

SUB CODE: 11, 20/ SUBM DATE: 17Jun64/ OTH REF: 005/

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CHUDACEK, J.; MOLEK, J.; CHYBA, E.

Production of high-pressure vessels. p. 208.

STROJIRENSKA VYROBA. (Ministerstvo tezkeho strojirenstvi, Ministerstvo presneho strojirenstvi a Ministerstvo automobiloveho prumyslu a zemedelskych stroju) Praha, Czechoslovakia. Vol. 7, no. 5, May 1959.

Monthly list of East European Accessions (EEAI), LC, Vol. 8, no. 10, Oct. 1959. Uncl.